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BIOLOGICAL SURVEY OF THE UPPER AND MIDDLE PATUXENT RIVER AND SOME OF ITS TRIBUTARIES, FROM THE MARYLAND ROUTE 97 BRIDGE NEAR ROXBURY MILLS TO THE MARYLAND ROUTE 4 BRIDGE NEAR WAYSON'S CORNER, MARYLAND. CHESAPEAKE BAY DRAINAGE BASIN

Federal Water Pollution Control Administration
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BIOLOGICAL SURVEY

OF

THE UPPER AND MIDDLE PATUXENT RIVER

AND SOME OF THE TRIBUTARIES

From the Maryland Route 97 Bridge

near Roxbury Mills

to the

Maryland Route 4 Bridge

near Wayson's Corner, Maryland

CHESAPEAKE BAY DRAINAGE BASIN

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I. INTRODUCTION

A biological survey of the Patuxent River and certain key tributaries between the Maryland Route 97 Bridge near Roxbury Mills and the Maryland Route 4 Bridge near Wayson's Corner was made between September and November 1967. The purpose of this survey was to supplement chemical and bacteriological data in evaluating water quality in the basin. The survey was performed at this particular time of year because of prevailing low flow conditions and high temperatures, thus showing the conditions during the time of greatest biological stress. Each biological station was sampled once for the purpose of evaluating water quality.

For the purpose of the survey, the community of bottom (benthic) organisms was selected as the indicator of the biological condition of the stream. Bottom organisms serve as the preferred food source for the higher aquatic forms and exhibit similar reactions to adverse stream conditions. The combination of limited locomotion and life cycles of one year or more for most benthic species provides more representative water quality of a stream. Fish and algal populations were given some consideration, but only to the extent that obvious conclusions could be drawn based upon casual observations.

In unpolluted streams, a wide variety of sensitive clean-water associated bottom organisms are normally found. Typical groups are stoneflies, mayflies, and caddisflies. These sensitive organisms usually are not individually abundant because of natural predation and competition for food and space; however, the total count or number of organisms at a given station may be high because of the number of different varieties present.

Sensitive genera (kinds) tend to be eliminated by adverse environmental conditions (e.g., chemical and/or physical) resulting from wastes reaching the stream. In waters enriched with organic wastes, comparatively fewer kinds are normally found, but great numbers of these genera may be present. Organic pollution-tolerant forms such as sludgeworms, rattailed maggots, certain species of bloodworms (red midges), certain leeches, and some species of air-breathing snails may multiply and become abundant because of a favorable habitat and food supply. These organic pollution-tolerant bottom organisms may also exist in the natural environment but are generally found in small numbers. The abundance of these forms in streams heavily polluted with organics is due to their physiological and morphological abilities to survive environmental conditions more adverse than conditions that may be tolerated by other organisms. Under conditions where inert silts or organic sludges blanket the stream bottom, the natural home of bottom organisms is destroyed, causing a reduction in the number of kinds of organisms present.

In addition to sensitive and pollution-tolerant forms, some bottom organisms may be termed intermediates, in that they are capable of living in fairly heavily polluted areas as well as in clean-water situations. These organisms occurring in limited numbers, therefore, cannot serve as effective indicators of water quality.

Streams grossly polluted with toxic wastes such as mine drainage will support little, if any, biological life and will reduce the population of both sensitive and pollution-tolerant organisms.

Classification of organisms in this report is considered in three categories: clean-water associated, intermediate and pollution-tolerant. This provides sufficient biological information to supplement physical and chemical water quality data for the study area. Tentative identification and counts of specific organisms, which were tabulated for use during intensive investigations of selected areas, are attached.

II. SUMMARY AND CONCLUSIONS

1. A biological survey of the upper Patuxent River and certain key tributaries between the Maryland Route 97 Bridge near Roxbury Mills and the Maryland Route 4 Bridge near Wayson's Corner was made between September 5 and November 27, 1967. Samples were collected from 18 stations on the main stem of the Patuxent River and from 17 stations on six tributaries.

2. Bottom organisms were selected as the primary indicators of biological water quality.

3. Excellent water quality was found in the Patuxent River at the Maryland Route 97 Bridge as evidenced by the 15 genera (kinds) of bottom organisms; however, water quality was only fair at the Maryland Route 108 Bridge downstream near Highland where the number of genera had been reduced to five.

4. Poor biological conditions were found to exist downstream from the Rocky Gorge Dam (Station 3) to Station 4, which was located approximately 20 yards upstream from Walker Branch.

5. Fair biological conditions were found upstream from the old Maryland Route 216 Bridge at the Laurel Swimming Pool (Station 6). The number of genera had increased to 10 at this station.

6. Walker Branch contributed poor quality water to the Patuxent River between Station 4 and Station 6.

7. Poor biological conditions existed in the Patuxent River at the new Maryland Route 216 Bridge (Station 7).

8. The Patuxent River was found to be mildly polluted between the Maryland Route 198 Bridge (Station 8) and Lemmon's Bridge Road at Fort Meade (Station 11).

9. Fair biological conditions were evident at the railroad bridge downstream from Lemmon's Road where 14 genera of bottom organisms were found.

10. Mild pollution was found between the bridge behind the Bowie Race Track (Station 13) and the foot bridge at the Belair landfill (Station 14), which is located upstream from the confluence with the Little Patuxent River.

11. The Little Patuxent River contributed mildly polluted water to the Patuxent River.

12. The Middle Patuxent River contributed good quality water to the Little Patuxent River in the upper reach.

13. Good water quality was found in the Little Patuxent River at the U. S. Route 1 Bridge (Station 17) downstream from Savage.

14. Downstream, Hammond Branch contributed only fair quality water to the Little Patuxent River, while Dorsey Run contributed gross organic pollution.

15. The water quality in the Little Patuxent River was reduced to only fair conditions at the Washington-Baltimore Parkway (Station 22). This is undoubtedly due to flow from Dorsey Run.

16. The Little Patuxent River had recovered to the point of good water quality at the Simond's Bridge at Fort Meade (Station 23).

17. Downstream at the Old Forge Bridge at Fort Meade, water quality was reduced to only fair conditions due to the effluent from a sewage treatment plant upstream.

18. Good water quality had been restored at Station 25, which was located approximately 100 yards downstream from the Woodwardville Bridge at Fort Meade.

19. Downstream, mild pollution was contributed to the Little Patuxent by Towser's Branch.

20. The Little Patuxent River was found to be mildly polluted from the Maryland Route 424 Bridge to its mouth near the Maryland Route 3 Bridge.

21. The Patuxent River was found to be mildly polluted from the Maryland Route 3 Bridge (Station 31) to the Maryland Route 214 Bridge west of Davidsonville, Maryland.

22. Fair water quality conditions were found downstream at the Queen Anne's Bridge near Hardesty, Maryland, as evidenced by the 13 genera of bottom organisms.

23. However, at the last station (No. 35) at the Maryland Route 4 Bridge mild pollution was again indicated.

III. DATA EVALUATION AND INTERPRETATION

A. General

The Patuxent River was sampled between the Maryland Route 97 Bridge near Roxbury Mills and the Maryland Route 4 Bridge west of Wayson's Corner, in order to evaluate the biological conditions of the stream and to supplement chemical and bacteriological data. Walker Branch, a small tributary which flows into the Patuxent downstream from the Rocky Gorge Dam, was sampled at its mouth.

The principal tributary, the Little Patuxent River, was sampled quite extensively. The tributaries to the Little Patuxent which were sampled were the Middle Patuxent River, Hammond Branch, Dorsey Run and Towser's Branch.

A total of 35 stations were sampled in this study of the Upper and Middle Patuxent River Basin.

Sampling stations were located after consideration of the following conditions:

1. Effects of tributaries
2. Areas having a known waste problem
3. Physical capability for sampling

Bottom organisms are animals that live directly in association with the bottom of a water course. They may crawl on, burrow in, or attach themselves to the bottom. Macroorganisms are usually defined as those organisms that will be retained by a No. 30 sieve. In essence, the organisms retained by the sieve are those that are visible to the unaided eye.

Each station was sampled once and the kinds of macro bottom organisms were identified and tabulated for the purpose of evaluating water quality.

Quantitative bottom samples were also taken using a Surber square foot sampler, an Ekman dredge (0.5 sq. ft.), or a Petersen dredge (0.6 sq. ft.), and the numbers of organisms per square foot were counted or calculated.

Quantitative samples were not taken at some stations because physical sampling conditions were poor or organisms were very sparse.

B. Biological Samples - Patuxent River and Tributaries

Station #1 - Patuxent River at the Maryland Route 97 Bridge near Roxbury Mills.

There is an excellent riffle area and a low-level dam immediately downstream from the bridge. The water was extremely cold and clear and moss was present on some of the rocks. Excellent biological conditions were indicated by the 15 genera of bottom organisms which included good mayfly (3 genera) and caddisfly (4 genera) populations. Other clean-water associated organisms included stoneflies and riffle beetles. Although the square foot sample was not very productive and only 18 bottom organisms were collected, 13 of them were clean-water forms. Excellent water quality was indicated at this station.

Station #2 - Patuxent River at the Snell Bridge on Maryland Route 108 near Highland.

The water was slightly turbid but minnows were observed. Bottom organisms were very sparse and a quantitative sample was not

taken for this reason. Only five genera of bottom organisms were found, which consisted of mayflies (2 genera), crayfish, a leech and blackfly larvae. The only explanation that can be offered for the poor bottom organism population is a low water discharge from the Tridelphia Reservoir located upstream since the known chemical and bacteriological data on this rural location offer no explanation. Only fair biological conditions were indicated at this location.

Station #3 - Patuxent River approximately 50 yards downstream from the Rocky Gorge Reservoir.

The water was clear but the rocks were all coated a reddish orange. However, the pH was 7.1, conductivity was 96 mho and iron was only 0.8 mg/l, indicating that there was no mine drainage problem. The only bottom organisms present were blackflies and three genera of intermediate midges. The blackflies were extremely abundant. A quantitative sample was not taken because of the large bedrock substrate which would not permit a meaningful sample. The poor bottom organism population is attributed to the low water discharge from the Rocky Gorge Reservoir located upstream. This drastic change in the ecology of the receiving stream by low water discharges has been substantiated by studies in the TVA system.

Station #4 - Patuxent River approximately 20 yards upstream from Walker Branch.

The water was slightly turbid and the bottom was soft. Bottom organisms were sparse and only two genera of air-breathing snails plus a genus of an intermediate midge were present. A quantitative sample was not taken because of the sparse population. Poor

biological conditions continue from upstream. This is still believed to be a result of a low level discharge from the Rocky Gorge Reservoir.

Station #5 - Walker Branch (tributary to the Patuxent River) at its mouth west of Laurel.

The water was very turbid and bottom organisms were very sparse. Only a few midge larvae of an intermediate genus could be found. Sediment was very heavy at the mouth and this could be the result of the backwash from the filters of the Washington Suburban Sanitary Commission pumping station on Rocky Gorge Reservoir. This backwash is stored in a lagoon off Walker Branch but it is released to the stream when the lagoon is filled, although usually during periods of high flow. Chlorine is used on the filters. Poor water quality was contributed to the Patuxent River by Walker Branch.

Station #6 - Patuxent River at the Laurel Swimming Pool immediately upstream from the old Maryland Route 216 Bridge.

An excellent riffle area existed and the water was clear. Fair biological conditions were indicated by the 10 genera of bottom organisms. They included such clean-water associated forms as mayflies (2 genera) and caddisflies. Only 13 bottom organisms were found in the square foot sample which consisted of six intermediate midge larvae, a blackfly larva, five pollution-tolerant bristleworms and a roundworm. Based on the known water chemistry and bacteriological data, it would appear that the inhibiting factor is probably still the low water discharge from the reservoir upstream.

Station #7 - The Patuxent River at the new Maryland Route 216 Bridge near Laurel.

The water was fairly clear but bottom organisms were sparse and only two genera were found, which consisted of clean-water

associated caddisflies and intermediate blackflies. Only four caddisflies and one blackfly were present in the square foot sample. Poor biological conditions may be attributed to a shifting sand bottom and storm drains emptying into the Patuxent upstream.

Station #8 - Patuxent River at the Route 198 Bridge downstream from Laurel.

The stream was clear but bottom organisms were sparse and only sludgeworms could be found. Only four sludgeworms were taken in the square foot sample. Mild pollution was indicated based on the bottom organisms and known chemical and bacteriological data.

Station #9 - Patuxent River at the Brock Bridge Road. This is located a short distance upstream from the Baltimore-Washington Parkway.

The water was slightly turbid and bottom organisms were sparse. The only bottom organisms found were sludgeworms and only 29 were collected in the square foot sample. The low productivity may be due in part to the shifting sand bottom, but based on the bottom organisms and the known chemical and bacteriological data, mild pollution was indicated at this station.

Station #10 -Patuxent River at the Duvall Bridge in the Patuxent Wildlife Refuge.

The current was very slow in this area. Only two genera of bottom organisms were found and they were very sparse. The square foot sample consisted of 14 sludgeworms and two true fly larvae. The shifting sand bottom may be partially responsible for the poor benthic population; however, poor chemical and bacteriological data have also been recorded at this location. The Maryland Department of Water Resources has recorded DO as low as 2.8 mg/l and BOD as high as 22 mg/l at this station. Based on the benthic samples and the chemical

and bacteriological data, this station was classified as mildly polluted.

Station #11 - Patuxent River at the Lemmon's Bridge Road at Fort Meade.

The water was extremely turbid and the bottom was very mucky. Only two genera of bottom organisms were present. They consisted of pollution-tolerant sludgeworms and intermediate sow-bugs. There were 18 sludgeworms and one sow-bug in the square foot sample. Mild pollution was still indicated at this station.

Station #12 - Patuxent River at the railroad bridge downstream from Lemmon's Road.

The water was fairly clear and an eel was observed at this station. Vegetation and riffles were absent, with the bottom being composed primarily of large rocks. For this reason a quantitative sample was not taken. However, 14 genera of bottom organisms were sampled which included such clean-water forms as caddisflies (2 genera), a fish fly and a gill-breathing snail. Intermediate forms consisted of scuds, sow-bugs, damselflies, flatworms, and two genera of intermediate midge larvae. Pollution-tolerant forms consisted of two genera of leeches and two genera of air-breathing snails. Based on the bottom organisms and known chemical and bacteriological data, fair biological conditions appeared to exist at this location.

Station #13 - Patuxent River at the bridge behind the Bowie Race Track.

Bottom organisms were generally sparse and only sludgeworms and another genus of bristleworm could be found. The square-foot sample consisted of 129 sludgeworms and three of these bristleworms.

Based on known DO as low as 3.8 mg/l, BOD as high as 11.1 mg/l and the above benthic data, mild pollution was suggested at this station.

Station #14 - Patuxent River at the foot bridge at the Belair landfill upstream from the confluence with the Little Patuxent River.

The water was somewhat turbid and a strong sewage odor was present. Part of this may be due to drainage from the landfill, although the Bowie-Belair Sewage Treatment Plant is just upstream. Only four genera of bottom organisms were present. The square foot sample consisted of 38 sludgeworms, 10 flatworms, four sow-bugs and two scuds. The bottom was soft and there was a great deal of brush in the stream. Based on the above benthic data, known DO as low as 3.0 mg/l, BOD as high as 10 mg/l and bacteriological data, this station was classed as mildly polluted.

Station #15 - Middle Patuxent River at the Maryland Route 108 Bridge near Clarksville.

The water was extremely clear and such clean-water associated forms as caddisflies (5 genera), mayflies (6 genera), stoneflies (2 genera), hellgrammites and riffle beetles (2 genera) were present. Twenty-two genera of bottom organisms were sampled, with the clean-water forms making up 76 percent of the 1,104 organisms collected in the square foot sample. The above benthic data plus known chemical and bacteriological data indicated extremely high water quality at this station. This location undoubtedly had the best water quality of all the stations sampled during this biological study and could be recommended as a control station.

Station #16 - Middle Patuxent River at the Maryland Route 32 Bridge at Simpsonville.

The water remained clear at this station and a hog-nose sucker was observed. Good water quality was still indicated, based on the benthic population plus the known water chemistry and bacteriological data. However, there had been a drastic change from the upstream station although habitat and sampling conditions were very similar. The number of genera had dropped to 12 from 22 upstream and the number of organisms per square foot had been reduced to 47 as compared with 1,104 upstream. The dominance had changed from clean-water to intermediate forms. Clean-water associated stoneflies, riffle beetles and hellgrammites found upstream were absent. Mayflies were sparse and only one genus was found as contrasted with six upstream. None was found in the quantitative sample compared to 43 upstream. It is recommended that an investigation be made of possible discharges of heavy metals or pesticides between this and the upstream station. However, good quality water is still contributed to the Little Patuxent River.

Station #17 - The Little Patuxent River at the U. S. Route 1 Bridge downstream from Savage.

Numerous minnows and darters (small members of the perch family) were readily observed in the clear water. Although only two bristleworms were collected in the square foot sample, good populations of mayflies (2 genera) and caddisflies (2 genera) were also present based on qualitative sampling. Other organisms consisted of the intermediate dragonflies, crayfish, the pollution-tolerant

bristleworms (2 genera) and air-breathing snails. Based on known water chemistry and the benthic population, good water quality was indicated.

Station #18 - Hammond Branch at the U. S. Route 1 Bridge northeast of Laurel.

The water was clear with some dead filamentous algae on the rocks. Organisms were generally sparse and for this reason a quantitative sample was not taken. Only five genera of bottom organisms were present which included such clean-water associated forms as caddisflies (3 genera) and mayflies. A pollution-tolerant air-breathing snail was also found. Only fair quality water was contributed to the Little Patuxent River.

Station #19 - Dorsey Run at the Dorsey Run Road upstream from the Maryland House of Correction near Jessup.

The water was clear and numerous minnows were observed throughout the area. Good water quality was indicated by the 16 genera of bottom organisms which included such clean-water forms as stoneflies, mayflies (2 genera) and caddisflies (3 genera). Although only 22 bottom organisms were collected in the square foot sample, 14 of them were the above clean-water forms. The balance was made up of intermediate midges (3 genera), damselflies, dragonflies, beetle larvae, crayfish, pollution-tolerant air-breathing snails (2 genera) and smoky alderflies.

Station #20 - Dorsey Run at the bridge on the road to the Maryland State Reformatory for Women near Jessup.

The water was extremely dark and a strong sewage odor was present. Only three genera of pollution-tolerant bottom organisms were found. The square foot sample consisted of 753 sludgeworms, 701 bloodworms and 64 mosquito larvae. The source of this pollution was traced to the Maryland House of Correction's farm operations. The

waste load flowed into a small tributary on the property of the Maryland House of Correction which entered Dorsey Run a short distance upstream from the effluent of their sewage treatment plant. Gross organic pollution was present at this station.

Station #21 - Dorsey Run at the bridge on Maryland Route 32.

The water was still slightly turbid and a faint sewage odor prevailed. A tremendous sludgeworm population was present in the gravel and 3,760 were present in the square foot sample. The balance of the quantitative sample consisted of 321 intermediate midge larvae, eight bloodworms and three fly larvae. These four genera were the only organisms found. Gross pollution was still indicated and polluted water was contributed to the Little Patuxent River.

Station #22 - Little Patuxent River at the Washington-Baltimore Parkway.

This station was located approximately 100 yards downstream from Dorsey Run. The Little Patuxent River was very turbid where Dorsey Run entered, but the load was soon diluted by the greater flow in the Little Patuxent River. Only four genera of bottom organisms were present but they included clean-water caddisflies (2 genera) and mayflies. The other form present was the dragonfly. Fair biological conditions were indicated by the known chemical and bacteriological data and the benthic population. It appears that the water quality would be higher if Dorsey Run were cleaned up.

Station #23 - Little Patuxent River at the Simond's Bridge at Fort Meade.

The water was clear and minnows and fishermen were observed. There is an excellent riffle below the bridge. Good water quality was indicated by the 11 genera of bottom organisms, which included

such clean-water forms as stoneflies, mayflies (4 genera) and caddisflies (3 genera). Only 17 organisms per square foot were collected but qualitative sampling indicated an excellent mayfly population and a fair caddisfly population. Chemical data appear to substantiate the water quality evaluation of this station. The poor quality water from Dorsey Run appears to be overcome at this point.

Station #24 - Little Patuxent River at the Old Forge Bridge at Fort Meade.

The water was clear but there was a faint sewage odor. This was evidently the result of a poor effluent coming from the Fort Meade Sewage Treatment Plant No. 2, which enters upstream approximately 50 yards downstream from the Simond's Bridge. The bottom of the stream where this effluent enters was black and there was a strong sewage odor. By the time it reached the Old Forge Bridge it had been diluted considerably. The number of genera of bottom organisms at this station was seven compared to 11 upstream. While mayflies (3 genera) and caddisflies were present, the dominant bottom organisms were sludgeworms, which made up 28 of the 36 organisms in the square foot sample. Based on occasional high BOD and this benthic population, only fair biological conditions were indicated.

Station #25 - Little Patuxent River approximately 100 yards downstream from the Woodwardville Bridge at Fort Meade.

The water was clear and there was an excellent riffle. The genera of bottom organisms had increased to 10 from the seven upstream. Clean-water associated forms included mayflies (3 genera), caddisflies and hellgrammites. Only 21 organisms were collected in the square foot sample which was dominated by 13 intermediate midge larvae.

However, the qualitative sample indicated a fair mayfly population and four were collected in the quantitative sample. Good water quality was suggested at this location.

Station #26 - Towser's Branch upstream from the U. S. Naval Academy Dairy Farm Creek.

The water was clear and a few minnows were observed. Fair biological conditions were indicated by the five genera of bottom organisms which included mayflies and caddisflies.

Station #27 - Towser's Branch downstream from the U. S. Naval Academy Dairy Farm Creek.

The water was clear, but there was a slight drop in water quality from the upstream station. Only four genera of bottom organisms were found but these did include a few mayflies. The other organisms consisted of intermediate damselflies and organic pollution-tolerant smoky alderfly larvae and an air-breathing snail. Mild pollution was suggested at this station.

Station #28 - Towser's Branch at Waugh Chapel Road downstream from the U. S. Naval Academy Dairy Farm Creek.

The water was somewhat cloudy and a definite odor was present from cow manure and urine. Only six genera of bottom organisms were present which included two genera of caddisflies. However, the dominant bottom organisms present were organic pollution-tolerant bloodworms (Tendipes sp.), which made up 278 of the 308 organisms in the square foot sample. Considering that the quantitative sample was taken in gravel, this amount was quite substantial. Towser's Branch contributed a mild pollutional load to the Little Patuxent River.

Station #29 - The Little Patuxent River at the Route 424 Bridge.

In spite of clear water the bottom organisms were extremely sparse. Only an intermediate midge larva was found and only two were in the square foot sample. Part of this may be due to the shifting sand bottom. However, occasional low DO and high BOD have been recorded at this station. Based on this and the low benthic population, mild pollution was indicated at this location.

Station #30 - Little Patuxent River approximately 100 yards upstream from the mouth near the Maryland Route 3 Bridge.

The river was turbid and deep and a faint sewage odor was present. Only five genera of bottom organisms were found, consisting of organic pollution-tolerant sludgeworms and another bristleworm, plus the intermediate sow-bugs, scuds and damselflies. This station is downstream from the Patuxent Sewage Treatment Plant. Based on occasional low DO and high BOD, plus the low benthic population, a mild pollutional load was contributed to the Patuxent River.

Station #31 - Patuxent River at the Maryland Route 3 Bridge.

The water was turbid and only two genera of bottom organisms consisting of sludgeworms and an intermediate midge larva were found. Twenty sludgeworms and six midge larvae were collected in the square foot sample. This poor benthic population, plus occasional low DO and high BOD, indicated mild pollution at this station.

Station #32 - Patuxent River at the U. S. Routes 301 and 50 bridge west of Annapolis.

The river was deep and channeled and there were no riffle areas. Based on dredge sampling, only four genera of bottom organisms

could be found. They consisted of fly larvae (2 genera), an intermediate midge and sludgeworms. The square foot sample consisted of six intermediate midge larvae, four fly larvae and two sludgeworms. Occasional low DO and high BOD also indicated mild pollution.

Station #33 - Patuxent River at the Maryland Route 214 Bridge west of Davidsonville.

The only bottom organisms found were sludgeworms and these were sparse. The square foot sample consisted of four sludgeworms. Occasional high BOD's are recorded here. Mild pollution was still indicated.

Station #34 - Patuxent River approximately 100 yards downstream from the Queen Anne's Bridge near Hardesty.

The river was clear and fishermen were observed upstream catching yellow perch (Perca flavescens). Thirteen genera of bottom organisms were found, which consisted of such clean-water forms as caddisflies and mayflies. Intermediate midges, flatworms, fingernail clams, scuds, damselflies and dragonflies were also present. Pollution-tolerant forms consisted of sludgeworms, bristleworms (2 genera) and two genera of air-breathing snails. Fingernail clams were the dominant form and made up 36 of the 76 organisms in the square foot sample. The balance was made up of 23 bristleworms, 14 caddisflies, one flatworm, one scud and one air-breathing snail. Fair water quality was indicated at this station.

Station #35 - Patuxent River at the Maryland Route 4 Bridge.

The water was deep and qualitative sampling had to be confined along the banks. Fishermen were also observed at this location.

Seven genera of bottom organisms were collected, which consisted of intermediate midge, scuds, sow-bugs (2 genera) and beetles. Organic pollution-tolerant kinds consisted of sludgeworms and leeches. Sludgeworms were dominant, comprising 172 of the 184 organisms in the square foot sample. This area is also subject to occasional low DO, high BOD, and high bacteriological counts. Based on this information, mild pollution was suggested.

TABLE I

BOTTOM ORGANISM DATA OF THE UPPER AND MIDDLE PATUXENT RIVER AND SOME OF ITS TRIBUTARIES

Sta. No.	Location	Bottom Organisms: No. of Kinds	Bottom Organisms: No. Per Sq. Ft.	Dominant Forms	Indicated Water Quality
1	Patuxent River at Md. Rt. 97 Bridge near Roxbury Mills	15	18	Mayflies Caddisflies Riffle Beetles	Excellent
2	Patuxent River at Snell Bridge on Md. Rt. 108 near Highland	5	Not taken	Mayflies	Fair biological conditions
3	Patuxent River approximately 50 yards downstream from Rocky Gorge Reservoir	4	Not taken	Blackflies	Poor biological conditions
4	Patuxent River approximately 20 yards upstream from Walker Branch	3	Not taken	Air-breathing Snails	Poor biological conditions
5	Walker Branch (trib. to Patuxent River) at its mouth west of Laurel	1	Not taken	Intermediate Midge	Poor
6	Patuxent River at the Laurel Swimming Pool immediately upstream from old Md. Rt. 216 Bridge	10	13	Caddisflies Intermediate Midges	Fair
7	Patuxent River at the new Md. Rt. 216 Bridge near Laurel	2	5	Blackflies Caddisflies	Poor
8	Patuxent River at Md. Rt. 198 Bridge downstream from Laurel	1	4	Sludgeworms	Mild pollution
9	Patuxent River at Brock Bridge Road	1	29	Sludgeworms	Mild pollution
10	Patuxent River at Duvall Bridge in the Patuxent Wildlife Refuge	2	16	Sludgeworms	Mild pollution
11	Patuxent River at Lemmon's Road at Ft. Meade	2	19	Sludgeworms	Mild pollution

TABLE I (Continued)

Sta. No.	Location	Bottom Organisms: No. of Kinds	Bottom Organisms: No. Per Sq. Ft.	Dominant Forms	Indicated Water Quality
12	Patuxent River at railroad bridge downstream from Lemmon's Road	14	Not taken	Damselflies Sow-bugs Leeches Air-breathing Snails	Fair
13	Patuxent River at bridge behind the Bowie Race Track	2	132	Sludgeworms	Mild pollution
14	Patuxent River at foot bridge at the Belair landfill upstream from the confluence with the Little Patuxent River	4	54	Sludgeworms Flatworms	Mild pollution
15	Middle Patuxent River at Md. Rt. 108 Bridge near Clarksville (trib. to the Little Patuxent River)	22	1,104	Caddisflies Intermediate Midges Blackflies Riffle Beetles Mayflies	Excellent
16	Middle Patuxent River at Md. Rt. 32 Bridge	12	47	Intermediate Midges True flies Mayflies	Good
17	Little Patuxent River at U.S. Rt. 1 Bridge downstream from Savage	9	2	Mayflies Air-breathing Snails	Good
18	Hammond Branch at U.S. Rt. 1 Bridge (trib. to the Little Patuxent River)	5	Not taken	Caddisflies Air-breathing Snails	Fair
19	Dorsey Run at Dorsey Run Road upstream from Jessup (trib. to Little Patuxent River)	16	22	Caddisflies Mayflies Intermediate Midges	Good

TABLE I (Continued)

Sta. No.	Location	Bottom Organisms: No. of Kinds	Bottom Organisms: No. Per Sq. Ft.	Dominant Forms	Indicated Water Quality
20	Dorsey Run at bridge on the road to Md. State Reformatory for Women near Jessup	3	1,518	Sludgeworms Bloodworms	Gross organic pollution
21	Dorsey Run at the bridge at Md. Rt. 32	4	4,092	Sludgeworms	Gross organic pollution
22	Little Patuxent River at the Washington-Baltimore Parkway	4	Not taken	Caddisflies Mayflies	Fair
23	Little Patuxent River at Simond's Bridge at Ft. Meade (trib. to Patuxent River)	11	17	Mayflies Caddisflies	Good
24	Little Patuxent River at Old Forge Bridge at Ft. Meade	7	36	Sludgeworms Mayflies Caddisflies	Fair
25	Little Patuxent River approximately 100 yards downstream from the Woodwardville Bridge at Ft. Meade (trib. to the Patuxent River)	10	21	Mayflies Intermediate Midges	Good
26	Towser's Branch upstream from the U.S. Naval Academy Dairy Farm Creek	5	Not taken	Mayflies Caddisflies Damselflies	Fair
27	Towser's Branch downstream from the U.S.Naval Academy Dairy Farm Creek	4	Not taken	Damselflies Smoky alderflies	Mild pollution
28	Towser's Branch at Waugh Chapel Road downstream from the U.S. Naval Academy Farm Creek (trib. to the Little Patuxent River)	6	308	Bloodworms Intermediate Midges	Mild pollution

TABLE I (Continued)

Sta. No.	Location	Bottom Organisms: No. of Kinds	Bottom Organisms: No. Per Sq. Ft.	Dominant Forms	Indicated Water Quality
29	Little Patuxent River at Md. Rt. 424 Bridge	1	2	Intermediate Midges	Mild pollution
30	Little Patuxent River approximately 100 yards upstream from the mouth near Md. Rt. 3 Bridge (trib. to the Patuxent River)	5	Not taken	Sow-bugs Damselflies Sludgeworms	Mild pollution
31	Patuxent River at Md. Rt. 3 Bridge	2	26	Sludgeworms Intermediate Midges	Mild pollution
32	Patuxent River at the U.S. Rts. 301 and 50 Bridge west of Annapolis	4	12	Sludgeworms True fly larvae Intermediate Midges	Mild pollution
33	Patuxent River at Md. Rt. 214 Bridge west of Davidsonville	1	4	Sludgeworms	Mild pollution
34	Patuxent River approximately 100 yards downstream from the Queen Anne's Bridge near Hardesty	13	76	Fingernail Clams Caddisflies Sludgeworms	Fair
35	Patuxent River at Md. Rt. 4 Bridge west of Wayson's Corner	7	184	Sludgeworms	Mild pollution

TABLE II

TABULATION OF BOTTOM ORGANISMS
UPPER AND MIDDLE REACHES OF THE PATUXENT RIVER AND TRIBUTARIES

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism in Square Foot Sample	Per Cent of Quantitative Sample
1. Patuxent River at the Maryland Route 97 Bridge near Roxbury Mills, Maryland	Arthropoda			
	Crustacea			
	Malacostraca			
	Decapoda			
	Cambarus sp.		1	5.56
	Insecta			
	Ephemeroptera			
	Ameletus sp.		1	5.56
	Isonychia sp.		3	16.66
	Stenonema sp.		5	27.77
	Plecoptera			
	Taeniopteryx sp.	x		
	Trichoptera			
	Chimarra sp.	x		
	Hydropsyche sp.	x	1	5.56
	Leptocercus sp.	x		
	Leucotrichia sp.	x		
	Odonata			
	Anisoptera			
	Boyeria sp.	x		
	Coleoptera			
	Stenelmis sp.		3	16.66
	Diptera			
	Tipula sp.		1	5.56
	Tendipedidae			
	Polypedilum sp.		2	11.11
	Diamesinae	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism in Square Foot Sample	Per Cent of Quantitative Sample
1. Patuxent River at the Maryland Route 97 Bridge (Cont.)	Mollusca			
	Gastropoda			
	Pulmonata			
	Ferrissia sp.	x	1	5.56
	Total No. of organisms per sq. ft.		18	
2. Patuxent River at the Maryland Route 108 Bridge near Highland, Maryland (Snell Bridge)	Annelida			
	Hirudinea			
	Placobdella sp.	x		
	Arthropoda			
	Crustacea			
	Malacostraca			
	Decapoda			
	Cambarus sp.	x		
	Insecta			
	Ephemeroptera			
	Baetis sp.	x		
	Stenonema sp.	x		
	Diptera			
	Simuliidae			
	Simulium sp.	x		
3. Patuxent River downstream from the Rocky Gorge Reservoir (approx. 50 yds. downstream from the Howard T. Duckett Dam)	Arthropoda			
	Insecta			
	Diptera			
	Simuliidae			
	Simulium sp.	x		
	Tendipedidae			
	Pentaneura sp.	x		
	Polypedilum sp.	x		
	Diamesinae	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism in Square Foot Sample	Per Cent of Quantitative Sample
4. Patuxent River upstream from Walker Branch (approx. 20 yds. upstream)	Arthropoda			
	Insecta			
	Diptera			
	Simuliidae			
	Simulium sp.	x		
	Tendipedidae			
	Pentaneura sp.	x		
	Polypedilum sp.	x		
	Diamesinae	x		
5. Walker Branch at the mouth (tributary to the Patuxent River upstream from Laurel, Maryland)	Arthropoda			
	Insecta			
	Diptera			
	Tendipedidae			
	Diamesinae	x		
6. Patuxent River at the Old Maryland Rt. 216 Bridge (at the Laurel Swimming Pool upstream from the bridge)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.		1	7.70
	Lumbriculidae	x	1	7.70
	Naididae			
	Stylaria sp.		3	23.07
	Nemathelminthes			
	Nematoda		1	7.70
	Arthropoda			
	Insecta			
	Ephemeroptera			
	Ameletus sp.	x		
	Caenis sp.	x		
	Trichoptera			
	Hydropsyche sp.	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism in Square Foot Sample	Per Cent of Quantitative Sample
6. Patuxent River at the Old Maryland Rt. 216 Bridge (Cont.)	Diptera			
	Simuliidae			
	Simulium sp.	x	1	7.70
	Tendipedidae			
	Polypedilum sp.		2	15.38
	Diamesinae		4	30.76
	Total No. of organisms per sq. ft.		13	
7. Patuxent River at the New Maryland Rt. 216 Bridge (north edge of Laurel, Maryland)	Arthropoda			
	Insecta			
	Trichoptera			
	Hydropsyche sp.	x	4	80.00
	Diptera			
	Simuliidae			
	Simulium sp.	x	1	20.00
	Total No. of organisms per sq. ft.		5	
8. Patuxent River at the Maryland Rt. 198 Bridge (downstream from Laurel, Maryland)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	4	100.00
	Total No. of organisms per sq. ft.		4	
9. Patuxent River at the Brock Road Bridge (first crossing upstream from the Baltimore-Washington Expressway)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	29	100.00
	Total No. of organisms per sq. ft.		29	

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
10. Patuxent River at Duvall Bridge (located in Patuxent Wildlife Refuge)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	14	87.50
	Diptera			
	Culicidae			
	Cheoborus sp.	x	2	12.50
	Total No. of organisms per sq. ft.		16	
11. Patuxent River at Lemmon's Road Bridge (at Ft. G. G. Meade)	Annelida			
	Oligochaeta			
	Tubificidae			
	Limnodrilus sp.	x	18	94.74
	Arthropoda			
	Crustacea			
	Malacostraca			
	Isopoda			
	Asellus sp.	x	1	5.26
	Total No. of organisms per sq. ft.		19	
12. Patuxent River at the Railroad Bridge (downstream from Lemmon's Road)	Platyhelminthes			
	Turbellaria			
	Tricladia			
	Dugesia sp.	x		
	Annelida			
	Hirudinea			
	Erpobdella sp.	x		
	Glossiphonia sp.	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
12. Patuxent River at the Railroad Bridge (Cont.)	Arthropoda			
	Crustacea			
	Malacostraca			
	Amphipoda			
	Gammarus sp.	x		
	Isopoda			
	Asellus sp.	x		
	Insecta			
	Megaloptera			
	Chauliodes sp.	x		
	Trichoptera			
	Cheumatopsyche sp.	x		
	Chimarra sp.	x		
	Odonata			
	Zygoptera			
	Ischnura sp.	x		
	Diptera			
	Tendipedidae			
	Polypedilum sp.	x		
	Pentaneura sp.	x		
	Mollusca			
	Gastropoda			
	Pulmonata			
	Gyraulus sp.	x		
	Physa sp.	x		
	Prosobranchia			
	Viviparus sp.	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
13. Patuxent River at bridge behind the Bowie Race Track	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	129	97.73
	Naididae			
	Stylaria sp.	x	3	2.27
	Total No. of organisms per sq. ft.		132	
14. Patuxent River at the foot bridge at the Belair land fill (upstream from the confluence of the Little Patuxent River)	Platyhelminthes			
	Turbellaria			
	Tricladia			
	Dugesia sp.	x	10	18.52
	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	38	70.37
	Arthropoda			
	Crustacea			
	Malacostraca			
	Amphipoda			
	Gammarus sp.	x	2	3.70
	Isopoda			
	Asellus sp.	x	4	7.41
	Total No. of organisms per sq. ft.		54	

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
15. Middle Patuxent River at Maryland Rt. 108 Bridge northeast of Clarksville, Maryland (tributary to the Little Patuxent River)	Annelida			
	Oligochaeta			
	Tubificidae			
	Limnodrilus sp.		1	0.09
	Lumbriculidae		2	0.18
	Nemathelminthes			
	Nematoda		1	0.09
	Arthropoda			
	Insecta			
	Plecoptera			
	Alloperla sp.	x		
	Isoperla sp.		24	2.17
	Ephemeroptera			
	Caenis sp.		1	0.09
	Ephemerella sp.		9	0.82
	Heptagenia sp.		1	0.09
	Isonychia sp.	x	4	0.36
	Pseudocloeon sp.		2	0.18
	Stenonema sp.		26	2.36
	Trichoptera			
	Chimarra sp.	x	22	1.99
	Cheumatopsyche sp.		46	4.17
	Glossosoma sp.	x	10	0.91
	Hydropsyche sp.		553	50.09
	Leptocercus sp.		1	0.09
	Megaloptera			
	Corydalus cornutus		1	0.09

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
15. Middle Patuxent River at Maryland Rt. 108 Bridge (Cont.)	Coleoptera			
	Psephenus sp.		1	0.09
	Stenelmis sp.		48	4.35
	Diptera			
	Atherix sp.		36	3.26
	Simuliidae			
	Simulium sp.		157	14.22
	Tendipedidae			
	Polypedilum sp.		2	0.18
	Diamesinae		156	14.13
	Total No. of organisms per sq. ft		1,104	
16. Middle Patuxent River at Md. Rt. 32 Bridge at Simpsonville (immediately downstream from the bridge - tributary to the Little Patuxent River)	Platyhelminthes			
	Turbellaria			
	Tricladia			
	Dugesia sp.		1	2.13
	Arthropoda			
	Insecta			
	Ephemeroptera			
	Stenonema sp.	x		
	Trichoptera			
	Chimarra sp.	x	7	14.89
	Cheumatopsyche sp.	x		
	Glossosoma sp.	x		
	Hydropsyche sp.	x	2	4.26
	Diptera			
	Atherix sp.		11	23.40
	Tendipedidae			
	Cryptochironomus sp.		2	4.26
	Pentaneura sp.		1	2.13
	Diamesinae	x	18	38.29

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
16. Middle Patuxent River at Md. Rt. 32 Bridge at Simpsonville (Cont.)	Mollusca			
	Gastropoda			
	Pulmonata			
	Ferrissia sp.	x	5	10.64
	Physa sp.	x		
	Total No. of organisms per sq. ft.		47	
17. Little Patuxent River at U.S. Rt. 1 Bridge (downstream from Savage)	Arthropoda			
	Crustacea			
	Malacostraca			
	Decapoda			
	Cambarus sp.	x		
	Insecta			
	Ephemeroptera			
	Isonychia sp.	x		
	Stenonema sp.	x		
	Trichoptera			
	Chimarra sp.	x		
	Hydropsyche sp.	x		
	Odonata			
	Anisoptera			
	Macromia sp.	x		
	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	1	50.00
	Lumbriculidae	x	1	50.00
	Mollusca			
	Gastropoda			
	Pulmonata			
	Lymnaea sp.	x		
	Total No. of organisms per sq. ft.		2	

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
18. Hammond Branch at U.S. Rt. 1 Bridge north of Laurel (trib. to the Little Patuxent River)	Arthropoda			
	Insecta			
	Ephemeroptera			
	Stenonema sp.	x		
	Trichoptera			
	Chimarra sp.	x		
	Cheumatopsyche sp.	x		
	Hydropsyche sp.	x		
	Mollusca			
	Gastropoda			
	Pulmonata			
	Physa sp.	x		
19. Dorsey Run at Dorsey Run Road near Jessup (trib. to the Little Patuxent River - station was upstream from the Md. House of Correction)	Arthropoda			
	Crustacea			
	Malacostraca			
	Decapoda			
	Cambarus sp.	x		
	Insecta			
	Plecoptera			
	Alloperla sp.		1	4.54
	Ephemeroptera			
	Baetis sp.	x	1	4.54
	Stenonema sp.	x	1	4.54
	Trichoptera			
	Chimarra sp.		1	4.54
	Hydropsyche sp.		5	22.72
	Cheumatopsyche sp.		5	22.72
	Megaloptera			
	Sialis sp.	x		
	Coleoptera			
	Dineutus sp.		2	10.09

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
19. Dorsey Run at Dorsey Run Road near Jessup (Cont.)	Odonata			
	Zygoptera			
	Ischnura sp.	x		
	Anisoptera			
	Gomphus sp.	x		
	Diptera			
	Tendipedidae			
	Cryptochironomus sp.	x	4	18.18
	Pentaneura sp.		1	4.54
	Diamesinae		1	4.54
	Mollusca			
	Gastropoda			
	Pulmonata			
	Gyraulus sp.	x		
	Physa sp.	x		
	Total No. of organisms per sq. ft.		22	
20. Dorsey Run at bridge off road to the Md. State Reformatory for Women near Jessup (downstream from the Md. House of Correction for Men)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	753	49.60
	Diptera			
	Culicidae			
	Culex sp.	x	64	4.22
	Tendipedidae			
	Tendipes sp.	x	701	46.18
	Total No. of organisms per sq. ft.		1,518	

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
21. Dorsey Run at Md. Rt. 32 Bridge (trib. to the Little Patuxent River)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	3,760	91.88
	Arthropoda			
	Insecta			
	Diptera			
	Psychodidae			
	Psychoda sp.	x	3	0.07
	Tendipedidae			
	Polypedilum sp.	x	321	7.85
	Tendipes sp.	x	8	0.20
	Total No. of organisms per sq. foot		4,092	
22. Little Patuxent River at the Washington-Baltimore Expressway Bridge (approx. 100 yds. downstream from Dorsey Run	Arthropoda			
	Insecta			
	Ephemeroptera			
	Stenonema sp.	x		
	Trichoptera			
	Cheumatopsyche sp.	x		
	Hydropsyche sp.	x		
	Odonata			
	Anisoptera			
	Gomphus sp.	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
23. Little Patuxent River at Simond's Bridge (at Ft. Meade)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.		9	52.94
	Arthropoda			
	Insecta			
	Plecoptera			
	Acroneuria sp.	x		
	Ephemeroptera			
	Heptagenia sp.	x		
	Stenonema sp.	x	2	11.77
	Baetis sp.	x		
	Isonychia sp.	x		
	Trichoptera			
	Hydropsyche sp.	x	2	11.77
	Neophylax sp.	x		
	Coleoptera			
	Dineutus sp.	x		
	Diptera			
	Tendipedidae			
	Polypedilum sp.		4	23.53
	Total No. of organisms per sq. ft.		17	
24. Little Patuxent at the old Forge Bridge (at Ft. Meade)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.		28	77.77
	Ephemeroptera			
	Ameletus sp.		1	2.78
	Baetis sp.		1	2.78
	Stenonema sp.		1	2.78

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
24. Little Patuxent at the old Forge Bridge (Cont.)	Trichoptera			
	Chimarra sp.		1	2.78
	Diptera			
	Tendipedidae			
	Polypedilum sp.		1	2.78
	Diamesinae		3	8.33
	Total No. of organisms per sq. ft.		36	
25. Little Patuxent downstream approx. 100 yds. from the Woodwardville Bridge (near Woodwardville)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	2	9.52
	Nemathelminthes			
	Nematoda		1	4.76
	Arthropoda			
	Insecta			
	Ephemeroptera			
	Baetis sp.	x	1	4.76
	Centroptilum sp.		3	14.29
	Stenonema sp.	x		
	Trichoptera			
	Neophylax sp.	x		
	Megaloptera			
	Corydalis cornutus	x		
	Diptera			
	Tendipedidae			
	Cryptochironomus sp.		9	42.86
	Polypedilum sp.		4	19.05
	Simuliidae			
	Simulium sp.	x	1	4.76
	Total No. of organisms per sq. ft.		21	

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
26. Towser Branch upstream from the U.S. Naval Academy Dairy Farm Creek (trib. to the Little Patuxent River)	Arthropoda			
	Insecta			
	Ephemeroptera			
	Leptophlebia sp.	x		
	Trichoptera			
	Leptocercus sp.	x		
	Odonata			
	Zygoptera			
	Lestes sp.	x		
	Diptera			
	Tipula sp.	x		
	Mollusca			
	Gastropoda			
	Pulmonata			
	Physa sp.	x		
27. Towser Branch downstream from the U.S. Naval Academy Dairy Farm Creek (trib. to the Little Patuxent River)	Arthropoda			
	Insecta			
	Ephemeroptera			
	Leptophlebia sp.	x		
	Megaloptera			
	Sialis sp.	x		
	Odonata			
	Zygoptera			
	Ischnura sp.	x		
	Mollusca			
	Gastropoda			
	Pulmonata			
	Physa sp.	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
28. Towser Branch at the Waugh Chapel Road (trib. to the Little Patuxent River)	Arthropoda			
	Insecta			
	Trichoptera			
	Cheumatopsyche sp.	x		
	Hydropsyche sp.	x		
	Diptera			
	Tendipedidae			
	Tendipes tentans	x	278	90.26
	Pentaneura sp.	x		
	Polypedilum sp.	x	27	8.77
	Mollusca			
	Gastropoda			
	Pulmonata			
	Physa sp.	x	3	0.97
	Total No. of organisms per sq. ft.		308	
29. Little Patuxent River at Md. Rt. 424 Bridge near Conways (trib. to the Patuxent River)	Arthropoda			
	Insecta			
	Diptera			
	Tendipedidae			
	Polypedilum sp.		2	100.00
	Total No. of organisms per sq. ft.		2	
30. Little Patuxent River upstream from Md. Rt. 3 Bridge (approx. 100 yds. upstream from the mouth)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x		
	Lumbriculidae	x		

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
30. Little Patuxent River upstream from Md. Rt. 3 Bridge (Cont.)	Arthropoda			
	Crustacea			
	Amphipoda			
	Gammarus sp.	x		
	Isopoda			
	Asellus sp.	x		
	Insecta			
	Odonata			
	Zygoptera			
	Ischnura sp.	x		
31. Patuxent River at Md. Rt. 3 Bridge	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	20	76.92
	Arthropoda			
	Insecta			
	Diptera			
	Tendipedidae			
	Polypedilum sp.	x	6	23.08
	Total No. of organisms per sq. ft.		26	
32. Patuxent River at U.S. Rt. 301 and Rt. 50 Bridge (west of Annapolis)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	2	16.67
	Arthropoda			
	Insecta			
	Diptera			
	Tipulidae			
	Tipula sp.		2	16.67
	Culicidae			
	Chaoborus sp.		2	16.67

TABLE II (Continued)

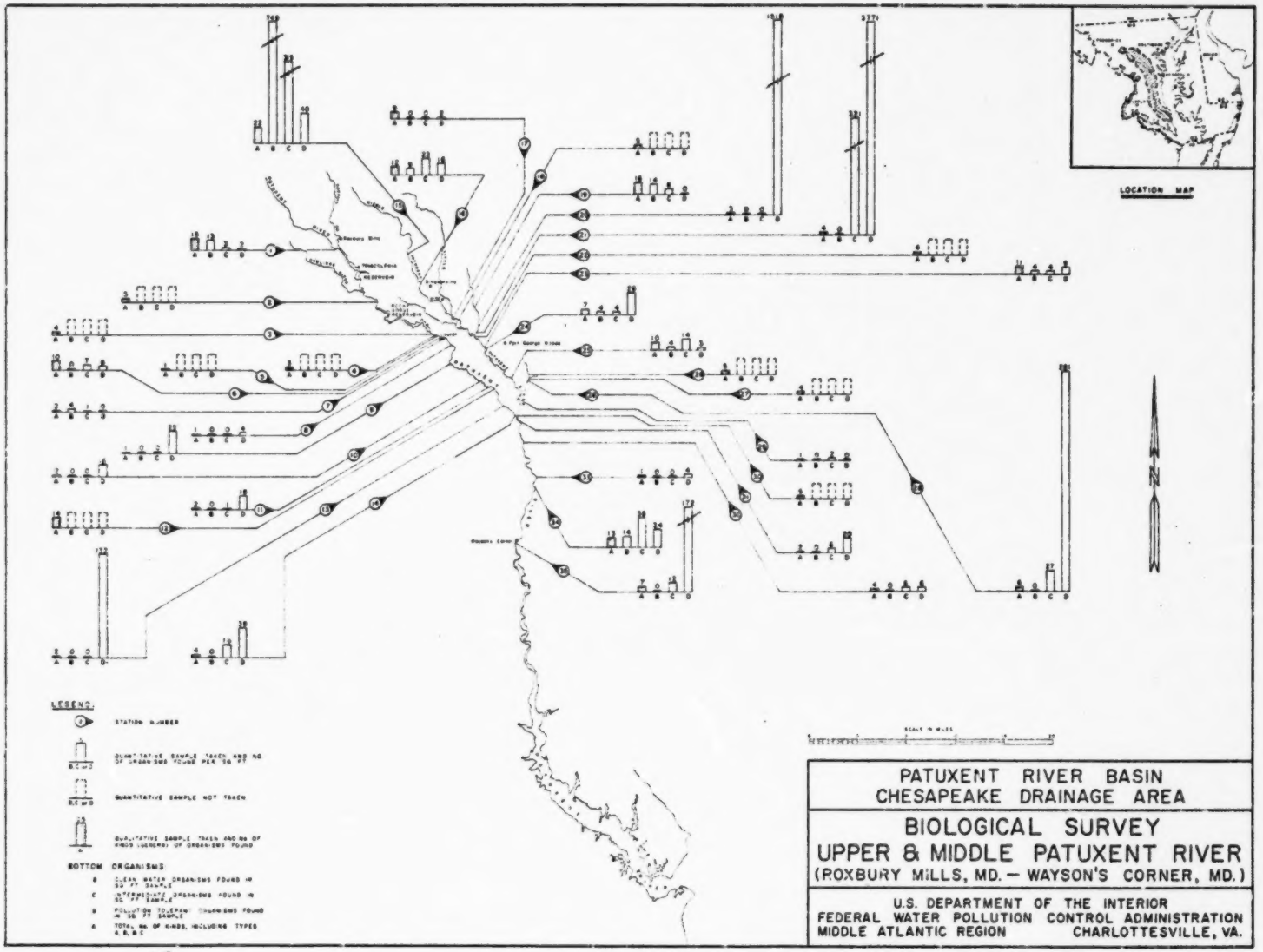
Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
32. Patuxent River at U.S. Rt. 301 and Rt. 50 Bridge (Cont.)	Tendipedidae			
	Polypedilum sp.		6	49.99
	Total No. of organisms per sq. ft.		12	
33. Patuxent River at Md. Rt. 214 Bridge (Central Ave.)(west of Davidsonville)	Annelida			
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	4	100.00
	Total No. of organisms per sq. ft.		4	
34. Patuxent River at Queen Anne's Bridge near Hardesty (approx. 100 yds. downstream)	Annelida			
	Oligochaeta			
	Lumbriculidae	x	14	18.42
	Naididae			
	Dero sp.		1	1.32
	Tubificidae			
	Tubifex sp.	x	8	10.52
	Platyhelminthes			
	Turbellaria			
	Tricladia			
	Dugesia sp.	x	1	1.32
	Arthropoda			
	Crustacea			
	Malacostraca			
	Amphipoda			
	Gammarus sp.	x	1	1.32
	Insecta			
	Ephemeroptera			
	Baetis sp.	x		
	Trichoptera			
	Hydropsyche sp.	x	14	18.42

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
34. Patuxent River at Queen Anne's Bridge near Hardesty (Cont.)	Odonata			
	Anisoptera			
	Gomphus sp.	x		
	Zygoptera			
	Ischnura sp.	x		
	Diptera			
	Tendipedidae			
	Polypedilum sp.	x		
	Mollusca			
	Gastropoda			
	Pulmonata			
	Gyraulus sp.			
	Lymnaea sp.	x	1	1.32
	Pelecypoda			
	Sphaeriidae			
	Sphaerium sp.	x	36	47.36
	Total No. of organisms per sq. ft.		76	
35. Patuxent River at Md. Rt. 4 Bridge (west of Wayson's Corner)	Annelida			
	Hirudinea			
	Placobdella sp.	x		
	Oligochaeta			
	Tubificidae			
	Tubifex sp.	x	172	93.48
	Arthropoda			
	Crustacea			
	Amphipoda			
	Gammarus sp.	x		
	Isopoda			
	Asellus sp.	x		
	Edotea sp.	x	2	1.09

TABLE II (Continued)

Station Number, Location and Description	Macro-Invertebrates Present	Present Only In Qualitative Sample	Number of Each Organism In Square Foot Sample	Per Cent of Quantitative Sample
35. Patuxent River at Md. Rt. 4 Bridge (Cont.)	Insecta			
	Coleoptera			
	Berosus sp.	x		
	Diptera			
	Tendipedidae			
	Polypedilum sp.	x	10	5.43
	Total No. of organisms per sq. ft.		184	


LOCATION MAP
LEGEND
STATION NUMBER
QUANTITATIVE SAMPLE TAKEN AND NO OF ORGANISMS FOUND PER SQ FT
QUANTITATIVE SAMPLE NOT TAKEN
QUALITATIVE SAMPLE TAKEN AND No OF KINDS (GENERA) OF ORGANISMS FOUND
BOTTOM ORGANISMS
B CLEAN WATER ORGANISMS FOUND IN SQ FT SAMPLE
C INTERMEDIATE ORGANISMS FOUND IN SQ FT SAMPLE
D POLLUTION TOLERANT ORGANISMS FOUND IN SQ FT SAMPLE
A TOTAL No OF KINDS, INCLUDING TYPES A, B, & C
SCALE IN MILES
PATUXENT RIVER BASIN
CHESAPEAKE DRAINAGE AREA
BIOLOGICAL SURVEY
UPPER & MIDDLE PATUXENT RIVER
(ROXBURY MILLS, MD. — WAYSON'S CORNER, MD.)
U.S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
MIDDLE ATLANTIC REGION
CHARLOTTESVILLE, VA.

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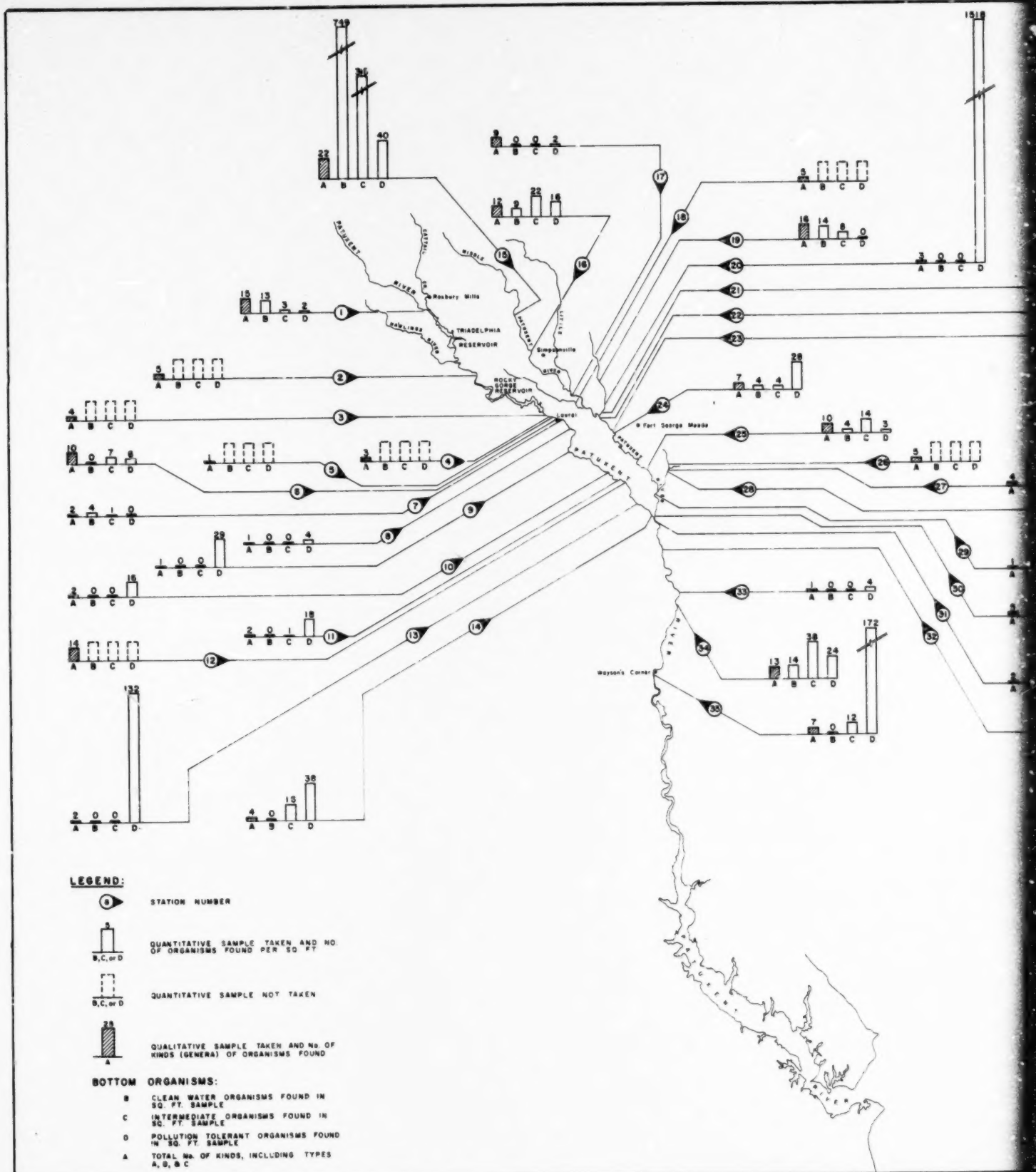
Rosbury Mills
TRIADELPHIA RESERVOIR
ROCKY GORGE RESERVOIR
Laurel
Fort George Meade
Waysons Corner
PATUXENT RIVER
LEGEND:
STATION NUMBER
QUANTITATIVE SAMPLE TAKEN AND NO. OF ORGANISMS FOUND PER SQ FT
QUANTITATIVE SAMPLE NOT TAKEN
QUALITATIVE SAMPLE TAKEN AND No. OF KINDS (GENERA) OF ORGANISMS FOUND
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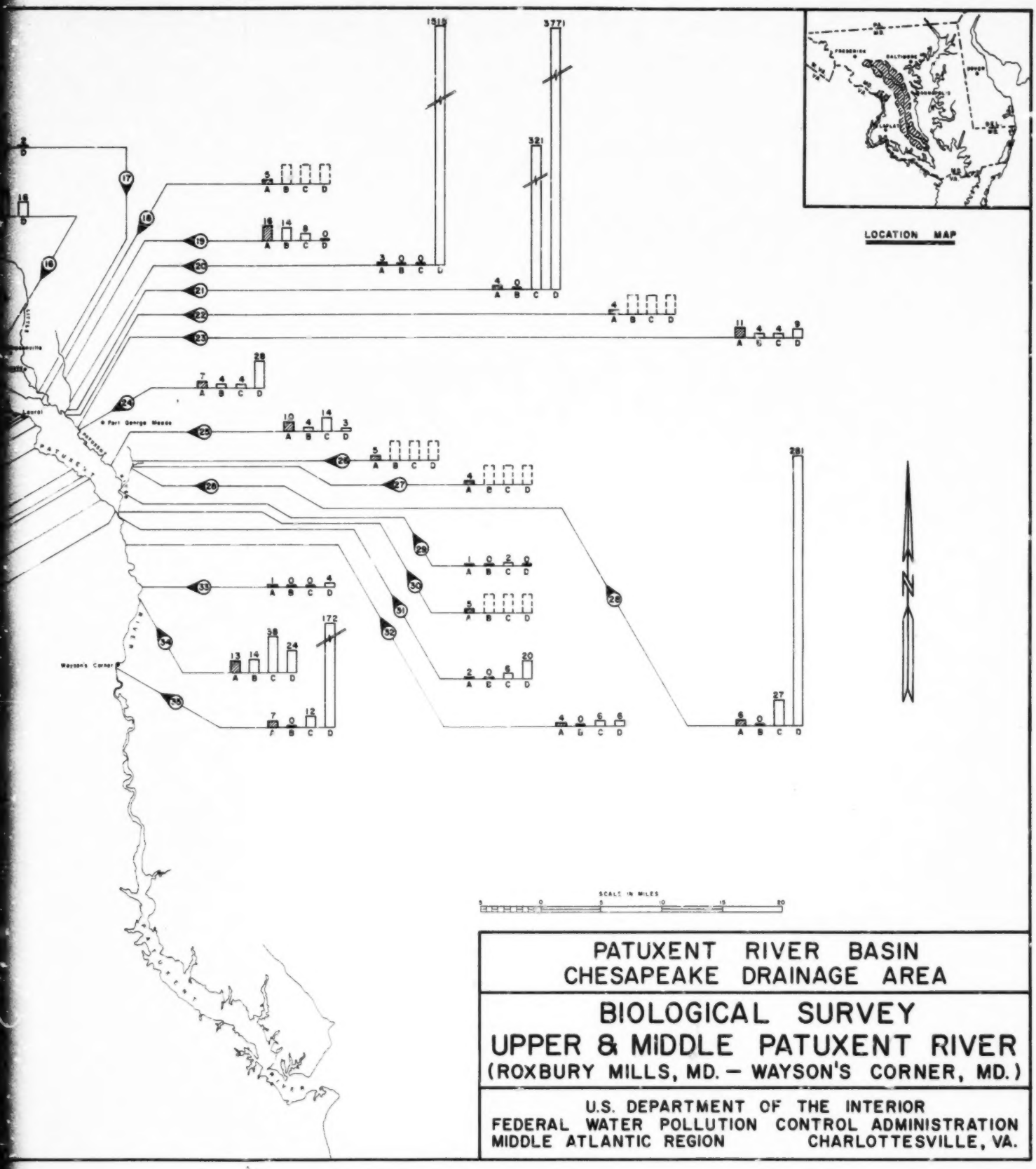

PATUXENT RIVER BASIN
CHESAPEAKE DRAINAGE AREA

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